

## **REMARKS**

Claims 9 to 21 appear in this application for the Examiner's review and consideration. Claims 1 to 8 were canceled in a previous Amendment. Claims 15, 18, and 21 are withdrawn, as being directed to a non-elected species. The claims are fully supported by the specification and claims as originally filed. Therefore, there is no issue of new matter.

The Advisory Action maintained the rejection of claims 9 to 14, 16, 17, 19, and 20 under 35 U.S.C. § 103(a), as being unpatentable over U.S. Patent No. 4,751,039 to Delevallee et al. (Delevallee) in view of U.S. Patent No. 3,791,466 to Patterson et al. (Patterson). In particular, the Advisory Action stated that the repair sleeve used in the presently claimed method reads on the cap 40 disclosed by Delevallee, and the guide thimble used in the presently claimed method reads on the lining sleeve 32 disclosed by Delevallee.

The Advisory Action also stated that Patterson was applied for its teaching on providing longitudinal slots for cap 40 of Delevallee to gain the advantages thereof, i.e., providing resilience and ease of insertion into the guide thimble.

In addition, the Final Office Action dated November 19, 2007, stated "a tool must inherently insert the replacement cap 40 into an opening of the top nozzle of the nuclear fuel in Delevallee et al., to ensure that this replacement locking tube is properly installed." Thus, the November 19, 2007, Final Office Action took the position that the tool for inserting the replacement cap 40 reads on the thimble insert assembly used in the presently claimed method. There is no indication in the present Final Office Action or the Advisory Action that the Examiner has changed that position since the issuance of the November 19, 2007, Final Office Action.

In response, Applicants submit that the presently claimed invention is directed to a method for repairing a nuclear fuel assembly. The presently claimed method comprises providing a repair sleeve, inserting the second end of the shaft of the repair sleeve into the guide thimble in the guide thimble opening in the top nozzle of the nuclear fuel assembly, and inserting a thimble insert assembly into an interior of the repair sleeve.

The structure of the repair sleeve provided in the first step of the presently claimed method is recited in that step of the claims. The structure of the repair sleeve recited in the claims includes tendons that bridge the first and second closed ends of each opening of the shaft of the repair sleeve, where each tendon has at least one projection configured to be

inserted into a dimple of a guide thimble sleeve. The tendons are configured to deflect in an instance of a horizontal load on the tendon during insertion into the guide thimble. In addition, Applicants submit that the common dictionary definition of a “dimple” is a small depression or indentation in a surface.

Therefore, the claims specifically recite that the repair sleeve is provided with tendons, each tendon having at least one projection configured to be inserted into a dimple of a guide thimble sleeve, and the tendons are configured to deflect during insertion into the guide thimble. Accordingly, as the claims recite that the repair sleeve is provided with those elements, the repair sleeve must have the tendons and the projections of the tendons prior to the insertion of the repair sleeve into the guide thimble.

The repair sleeve, having the projections of the tendons, is then inserted into the guide thimble, such that the projections of the tendons project into the dimples of the guide thimble sleeve. Again, in the presently claimed method, the tendons and the projections of the tendons are present prior to the insertion of the repair sleeve into the guide thimble. Thus, the projections of the tendons are present as the repair sleeve is inserted into the guide thimble.

Accordingly, to be within the scope of the presently claimed invention, the prior art must disclose or suggest:

Providing a repair sleeve having at least one projection configured to be inserted into a dimple of a guide thimble sleeve on each tendon of the repair sleeve;

Inserting the repair sleeve into the guide thimble, such that the projections of the tendons project into the dimples of the guide thimble sleeve; and

Inserting a thimble insert assembly into an interior of the repair sleeve.

As will be recognized by one of ordinary skill in the art, the projections of the tendons must be present on the repair sleeve **prior to** and **during** insertion of the repair sleeve into a **guide thimble**.

In contrast, Delevallee discloses a method for lining an instrumentation tube with a sleeve so as to reduce the amplitude of the vibrations of a “glove finger” in an instrumentation tube. See Delevallee, column 3, lines 21 to 43. Delevallee does not disclose or suggest repairing a nuclear fuel assembly. One of ordinary skill in the art would have no reason to apply the disclosure of Delevallee to repair a fuel assembly in the region of a guide thimble as presently claimed.

In addition, one of ordinary skill in the art following the disclosures of the cited references would not obtain the presently claimed method. Delevallee does not disclose or

suggest that the portion of the cap 40 that is inserted into the sleeve 32 has any projections **prior to and during** insertion of the cap 40 into the sleeve 32. Instead, Delevallee discloses that the sleeve 32 is radially bulged **after insertion** into an **instrumentation tube**, holding the sleeve 32 in position during the steps preceding final connection. Delevallee, column 4, lines 7 to 18. Then, the cap 40 is inserted into sleeve 32, and a tool for radial expansion is inserted into the cap 40. The tool is located at the horizontal level of the temporary securing expansion of the lining sleeve 32, and actuated to expand the cap 40, and achieve complete locking of the cap 40 and the sleeve 32 against the shoulder 26 of the nozzle 12. Delevallee, column 4, lines 44 to 50. As will be recognized by one of ordinary skill in the art, the tool is removed from the cap 40 after expansion.

Thus, Delevallee discloses a cap 40 that is bulged only after insertion into sleeve 32. The disclosed cap 40 does not comprise the tendons and projections of the repair sleeve used in the presently claimed method. Delevallee does not disclose or suggest providing a repair sleeve having tendons, where each tendon has at least one projection configured to be inserted into a dimple of a guide thimble sleeve. Delevallee also fails to disclose or suggest inserting the repair sleeve with the tendons and the projections into a guide thimble, as presently claimed. Delevallee provides no reason for one of ordinary skill in the art to obtain the presently claimed method.

As stated in the Advisory Action, Patterson was applied for its teaching on providing longitudinal slots for cap 40 of Delevallee to provide resilience and ease of insertion into the guide thimble. However, one of ordinary skill in the art would understand from the disclosure of Delevallee that such resilience for ease of insertion into the guide thimble is neither required nor desirable in the process disclosed by Delevallee. Delevallee simply discloses that the cap 40 is inserted into the sleeve 32. Delevallee does not disclose or suggest that there is any resistance to this insertion. One of ordinary skill in the art would understand that the cap 40, which is expanded after insertion into sleeve 32, should have a diameter prior to insertion that allows the easy insertion of the cap 40 into sleeve 32. Therefore, one of ordinary skill in the art would have no reason to add the slots disclosed by Patterson to provide ease of insertion into the sleeve.

One of ordinary skill in the art will also understand that providing resilience to the cap 40 is not desirable. Delevallee discloses that the cap 40 is bulged after insertion into the sleeve 32 to achieve complete locking of the cap 40 and the sleeve 32 against the shoulder 26 of the nozzle 12. Should the cap 40 be made resilient by the addition of slots, the cap 40 would not form an effective lock with the sleeve 32 against the shoulder 26.

One of ordinary skill in the art would understand that the attachment of the cap 40 and the sleeve 32 to the shoulder of the nozzle 12 would be weakened by the addition of slots. Thus, one of ordinary skill in the art would have no reason to add the slots disclosed by Patterson to the cap 40 disclosed by Delevallee.

However, even if one of ordinary skill in the art following the disclosure of Delevallee did add the slots disclosed by Patterson, the addition of the slots would not provide the presently claimed method. The resulting combination of the disclosures of Delevallee and Patterson would provide a cap 40 having slots, but no projections from tendons bridging the ends of the slots. Neither Delevallee nor Patterson discloses or suggests a repair sleeve having any sort of projection prior to or during insertion into a guide thimble sleeve. Instead, Delevallee discloses a cap 40 that is expanded into a sleeve 32 after insertion into the sleeve 32, and Patterson discloses a sleeve 58, having four slots 60 to make it possible to insert the sleeve 58 into a grid cell for brazing. See Patterson, column 5, lines 17, and Figures 10 and 11. A cap 40, as disclosed by Delevallee, having the slots 60, disclosed by Patterson, is not the repair sleeve inserted into the guide thimble sleeve in the presently claimed method.

One of ordinary skill in the art would also understand from the teaching of the present specification that the tool disclosed by Delevallee to bulge the cap 40 and sleeve 32 does not read on the thimble insert assembly that is inserted into the interior of the repair sleeve in the presently claimed method. As taught by the present specification, at page 7, lines 9 to 12, the thimble insert assembly is inserted into the repair sleeve to prevent the projections of the tendons from exiting the dimples of the guide thimble through plastic deformation of the sleeve, such that a structural connection is established between each projection on the tendons and the dimple into which it projects. The expansion tool disclosed by Delevallee is used to expand and bulge the cap 40 and the sleeve 32. The tool is removed after expansion to allow insertion of the glove finger. It does not prevent projections on tendons from exiting dimples of a guide thimble.

Applicants note that it is well settled law that limitations in the specification are not typically read into the claims. However, it is also well settled law that the claims must be interpreted in light of the specification. Therefore, reference to the specification in the analysis of the claims is not improper.

With regard to the dimples recited in the present claims, as stated above, the simple dictionary definition of a “dimple” is a small depression or indentation in a surface. Delevallee and Patterson do not disclose or suggest adding a projection on a tendon to the

cap 40, such that the projection on the tendon is inserted into a dimple of the sleeve 32, as the cap 40 is inserted into the sleeve 32. Instead, Delevallee discloses that the cap 40 and the sleeve 32 are radially expanded with a radial expansion tool. This results in a bulge that extends around the entire circumference of both the cap 40 and the sleeve 32. Such a bulge is not a dimple, and would not be considered a dimple by one of ordinary skill in the art. Combining the disclosure of Patterson with that of Delevallee would only provide a cap 40 with four slots that is radially expanded with the process disclosed by Delevallee. It would not provide the repair sleeve of the presently claimed method.

Therefore, Delevallee and Patterson, whether taken alone or in combination, do not disclose or suggest the presently claimed method, or provide any reason to obtain the presently claimed method, and, thus, the claims are not obvious over those references. Accordingly, it is respectfully requested that the Examiner withdraw the rejection of claims 9 to 14, 16, 17, 19, and 20 under 35 U.S.C. § 103(a) over Delevallee in view of Patterson.

The Advisory Action did not address the rejection of the claims in the Final Office Action under 35 U.S.C. § 112, first paragraph. Applicants submit that that rejection was overcome by the arguments submitted in the Response to the Final Office Action dated October 20, 2008. Accordingly, it is respectfully requested that the Examiner withdraw the rejection of claims 9 to 14, 16, 17, 19, and 20 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

Applicants thus submit that the entire application is now in condition for allowance, an early notice of which would be appreciated. Should the Examiner not agree with Applicants' position, a personal or telephonic interview is respectfully requested to discuss any remaining issues prior to the issuance of a further Office Action, and to expedite the allowance of the application.

No fee is believed to be due for the filing of this Response. Should any fees be due, however, please charge such fees to Deposit Account No. 11-0600.

Respectfully submitted,  
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